

WHAT IS CLAIMED IS:

1. An automatic transfer switch (ATS) system comprising:
 - at least one input port capable of being coupled to at least one power source to receive an input power;
 - 5 a first internal component that requires internal power satisfying a first criterion in order to properly operate; and
 - a power converter coupled to the first internal component and to the at least one input port, wherein the
 - 10 power converter is capable of receiving the input power by way of the at least one input port and converting the input power into the internal power to be provided to the first internal component, and
 - wherein the internal power provided by the power
 - 15 converter satisfies the first criterion, even though at least one characteristic of the input power varies within a range.
2. The ATS system of claim 1, the at least one input port is capable of receiving first and second input powers from first and second external power sources, and wherein the power converter is capable of combining the
- 5 first and second input powers to provide the internal power.
3. The ATS system of claim 1, wherein the power converter includes a rectifier section and a switch mode regulator section coupled to one another.
4. The ATS system of claim 3, wherein the power converter further includes a first filter section that couples the rectifier section and the switch mode regulator section.
5. The ATS system of claim 4, wherein the power

converter further includes a second filter section that is coupled to the switch mode regulator section

6. The ATS system of claim 5, wherein the input power is provided to the rectifier section, the internal power is provided from the second filter section, and each of the first and second filter sections operates as a low-pass filter.

7. The ATS system of claim 3, wherein the at least one input port includes a first input port that is capable of receiving a first input power from a first power source and a second input port that is capable of receiving a second input power from a second power source.

8. The ATS system of claim 7, wherein each of the first and second input powers has three phases in an arrangement that is one of a delta arrangement, a wye arrangement and a corner-grounded delta arrangement, and wherein two of the three phases of each of the first and second input powers are coupled to the rectifier as the input power.

9. The ATS system of claim 7, wherein the rectifier section includes a first diode array that receives the first input power and a second diode array that receives the second input power, wherein the first and second diode arrays respectively rectify the first and second input powers, wherein respective first output terminals of each of the first and second diode arrays are coupled to one another and respective second output terminals of each of the first and second diode arrays are coupled to one another so that an overall rectified power based upon either or both of the first and second input powers is developed.

10. The ATS system of claim 4, wherein the switch mode

regulator section includes a transistor, a switching control device, and a transformer having first, second, third and fourth transformer terminals,

- 5 wherein the first transformer terminal is coupled to a first output terminal of the rectifier section, wherein the second transformer terminal is coupled to a transistor, which in turn is coupled to the switching control device, wherein the fourth transformer terminal
- 10 is coupled to a first diode that in turn is coupled to a second diode by which a feedback signal is provided to the switching control device, wherein a junction between the first and second diodes is coupled to the third transformer terminal by at least one capacitor, and
- 15 wherein the internal power is based upon an intermediate power provided by way of the junction and the third transformer terminal.

11. The ATS system of claim 10, wherein the switch is a transistor is a MOSFET and the switching control device is a microcircuit that outputs a pulse width modulated signal to the MOSFET based upon the feedback signal.

12. The ATS system of claim 4, wherein the criterion is that a voltage of the output power remain at one of substantially 12 Volts DC and substantially 5 Volts DC.

13. The ATS system of claim 1, wherein the power converter includes a switch mode power supply (SMPS) and a switch mode regulator coupled to an output terminal of the SMPS.

14. The ATS system of claim 13, further comprising a second internal component that requires secondary internal power satisfying a second criterion in order to properly operate, wherein internal power satisfying the
- 5 first criterion is provided at the output terminal of the SMPS and the secondary internal power satisfying the

second criterion is provided by the switch mode regulator.

15. The ATS system of claim 14, wherein the first internal component includes at least one of a relay and a digital remote option board, and the second internal component includes a microprocessor.

16. The ATS system of claim 1, wherein the at least one characteristic of the input power that varies is a voltage of the input power, which varies within one of a first range of 0 to 300 Volts AC and a second range of
5 300 to 600 Volts AC.

17. An automatic transfer switch (ATS) system comprising:

an internal component within the ATS system that requires, for its operation, internal power satisfying a
5 criterion;

means for receiving an input power provided from at least one outside power source; and

means for converting the input power into the internal power satisfying the criterion even though at
10 least one characteristic of the input power varies within a range, wherein the means for converting is coupled to the means for receiving and to the internal component.

18. The ATS system of claim 17, wherein the means for receiving an input power is capable of receiving power provided from at least two outside power sources, and the means for converting the input power into the internal
5 power is capable of developing the internal power as a combination of the power received from more than one outside power source.

19. The ATS system of claim 18, wherein at least one of the means for receiving and the means for converting includes a plurality of high voltage tolerant diodes

capable of handling voltages provided from the two
5 outside power sources, where the two outside power
sources can have any of a variety of three-phase
configurations.

20. In an automatic transfer switch (ATS) system, a
method of providing internal power to an internal
component within the ATS system based upon input power
received from first and second external power sources,
5 wherein the internal power provided to the internal
component satisfies a criterion despite variation of at
least one characteristic of the input power, the method
comprising:

rectifying the input power at a rectifier to produce
10 rectified power; and

converting the rectified power into a modified
rectified power by way of the switching mechanism,
wherein the internal power is based upon the modified
rectified power, and wherein the converting includes
15 developing a feedback signal indicative of an aspect
of the modified rectified power that can vary as a result
of the variation of the at least one characteristic of
the input power; and

adjusting the converting in response to the feedback
20 signal so that the internal power based upon the modified
rectified power satisfies the criterion.

21. The method of claim 20, further comprising filtering
the rectified power by way of a first low-pass filter
before converting the rectified power; and

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5 filtering the modified rectified power to develop
the internal power.

22. The method of claim 20,

 wherein the input power includes a first input power
from a first of the external power sources and a second
input power from a second of the external power sources,
5 and wherein the rectifier simultaneously rectifies each
of the first and second input powers and combines the
first and second input powers to generate the rectified
power.

23. A power conversion device capable of being
coupled to at least first and second power sources and
providing a low-voltage output power based upon a
combination of first and second powers provided by the
5 first and second power sources, respectively, the power
conversion device comprising:

 a rectifier section including

 a first diode array capable of receiving
and rectifying the first power and

10 a second diode array capable of receiving
and rectifying the second power, wherein output
ports of the first and second diode arrays are
coupled to one another so that the rectified
first and second powers are combined to form a
15 first modified power;

 a switch mode regulator section coupled to the
rectifier section, wherein the switch mode regulator
provides a second modified power based upon the first
modified power; and

20 at least one filter section coupled to at least one
of the switch mode regulator section and the rectifier
section,

 wherein the low voltage output power is one of the
second modified power and a filtered power provided as a

25 result of operation of the filter section upon the second modified power.